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1-32. (canceled) *Shalom et al.* CLAIMS

$\gamma_3(10^4, 10^8)$ $\gamma_4(10^4, 132, 10^8)$ 2 118

1 33. (previously presented) Signal processing apparatus comprising a signal amplifier and a
2 frequency converter which operate in succession on an input signal, and a lineariser which is provided
3 between the amplifier and the frequency converter to introduce a correction signal that is adapted to
4 make the overall input and output characteristic of the apparatus more linear by linearising both the
5 amplifier and frequency converter.

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1 34. (previously presented) Signal processing apparatus according to Claim 33, wherein a
2 feedback signal derived from the output of the apparatus is used by the lineariser to adapt the correction
3 signal.

1 35. (previously presented) Signal processing apparatus according to Claim 34, further
2 comprising a pilot signal generator for introducing a pilot signal into the input signal prior to frequency
3 conversion and amplification, wherein the feedback signal contains distortion components from the pilot
4 signal produced by at least one of the frequency converter and the amplifier.

1 36. (previously presented) A signal processing apparatus according to Claim 35, wherein the
2 pilot signal is one of a CW carrier signal, a full carrier AM signal, a suppressed carrier AM signal, a
3 single sideband signal, a quadrature amplitude modulated signal, a filtered quadrature phase shift keyed
4 signal, a direct sequence spread spectrum signal, and a frequency hopped carrier signal modulated with
5 any of the foregoing kinds of signal.

1 37. (previously presented) Signal processing apparatus according to Claim 35, wherein the
2 pilot signal is one of a two-tone pilot signal and a multi-tone pilot signal.

1 38. (previously presented) A signal processing apparatus according to Claim 35, wherein the
2 pilot signal is removed from the output of the apparatus by a filter or by the introduction of a pilot
3 cancellation signal.

1 39. (previously presented) Signal processing apparatus according to Claim 38, wherein the
2 pilot cancellation signal is adjusted using feedback derived from the output of the apparatus.

1 40. (previously presented) Signal processing apparatus according to Claim 38, wherein the
2 pilot cancellation signal comprises a frequency converted, phase shifted and amplitude adjusted version
3 of the pilot signal.

1 41. (previously presented) Signal processing apparatus according to Claim 38, wherein a
2 digital signal processor is used to control the pilot cancellation signal using feedback from the output of
3 the signal processing apparatus.

1 42. (previously presented) Signal processing apparatus according to Claim 38, further
2 comprising a suppressor for cancelling signals which are images of the pilot signal.

1 43. (previously presented) Signal processing apparatus according to Claim 33, wherein a
2 digital signal processor is used to control the correction signal using feedback from the output of the
3 signal processing apparatus.

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1 44. (currently amended) Signal processing apparatus according to Claim 33, wherein the
2 lineariser comprises a distortion generator for producing the correction signal from the output signal of
3 whichever of the amplifier and the frequency converter precedes it[[],].

1 45. (previously presented) Signal processing apparatus according to Claim 44, wherein the
2 distortion generator comprises a non-linearity generator.

1 46. (previously presented) Signal processing apparatus according to Claim 45, wherein the
2 non linearity generator uses at least one of anti-parallel diodes, a FET channel, dual gate GaAsFETs
3 operating close to pinch-off, Shottky diodes, mixers and multipliers in the non-linearity generating
4 process.

1 47. (previously presented) Signal processing apparatus according to Claim 46, wherein the
2 non linearity generator is arranged to generate the non-linearity by mixing its input signal with itself one
3 or more times to produce the non-linearity.

1 48. (previously presented) Signal processing apparatus according to Claim 47, wherein the
2 non linearity generator is arranged to generate a third order non-linearity by mixing the input to the
3 non-linearity generator with itself and then with its input.

1 49. (previously presented) Signal processing apparatus according to Claim 47, wherein
2 components of the non-linearity are generated and controlled separately.

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1 50. (previously presented) Signal processing apparatus according to Claim 49, wherein
2 in-phase and quadrature signals are produced from each separately generated non-linearity component
3 and are controlled separately.

1 51. (previously presented) Signal processing apparatus according to Claim 33, wherein the
2 frequency converter comprises a mixer for mixing a mixing signal into a received signal destined to be
3 frequency converted.

1 52. (previously presented) Signal processing apparatus according to Claim 33, wherein the
2 frequency converter is an upconverter for converting an intermediate frequency band signal into a radio
3 frequency band signal.

1 53. (previously presented) Signal processing apparatus according to Claim 52, wherein the
2 frequency converter comprises in-phase and quadrature signal paths for handling in-phase and quadrature
3 signals representing a signal at the intermediate frequency band, wherein there is a separate,
4 independently controlled, lineariser operating on each of these signal paths.

1 54. (previously presented) Signal processing apparatus according to Claim 33, wherein the
2 frequency converter is a downconverter for converting a radio frequency band signal into an intermediate
3 frequency band signal.

1 55. (previously presented) Signal processing apparatus according to Claim 54, wherein the
2 frequency converter comprises in-phase and quadrature signal paths for handling in-phase and quadrature
3 signals representing a signal at the intermediate frequency band, wherein there is a separate,
4 independently controlled, lineariser operating on each of these signal paths.

1 56. (previously presented) Signal processing apparatus according to Claim 33, wherein the
2 input signal is a CDMA signal.

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1 57. (previously presented) A method of processing an input signal to produce an output
2 signal, the method comprising the steps of signal amplification and frequency conversion, and the step of
3 introducing, between the steps of amplification and frequency conversion, a correction signal that is
4 adapted to make the overall input and output characteristic of the signal processing method more linear
5 by linearising both the amplification and frequency conversion.

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1 58. (previously presented) A method according to Claim 57, comprising the step of using a
2 feedback signal derived from the output signal of the signal processing method to adapt the correction
3 signal.

1 59. (previously presented) A method according to Claim 58, further comprising the step of
2 introducing a pilot signal into the input signal prior to frequency conversion and amplification, wherein
3 the feedback signal contains distortion components from the pilot signal produced by at least one of the
4 frequency conversion and amplification steps.

1 60. (previously presented) A method according to Claim 59, further comprising the step of
2 removing the pilot signal from the output signal of the method by filtering or by introducing a pilot
3 cancellation signal.

1 61. (previously presented) A method according to Claim 60, comprising the step of
2 adjusting the pilot cancellation signal using feedback derived from the output signal of the signal
3 processing method.

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1 62. (previously presented) A method according to Claim 57, wherein the correction signal is
2 produced by a step of distorting the signal produced by whichever of the amplifying and frequency
3 conversion steps precedes it.

1 63. (previously presented) A method according to Claim 62, wherein the step of distortion
2 generation comprises the step of generating and controlling non-linearity components independently.

1 64. (previously presented) A method according to Claim 57, wherein the input signal is a
2 CDMA signal.